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IT Adoption in the Social Care: a study of the factors that mediate technology adoption

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Abstract

Organisations within the social care sector are faced with demanding changes driven by the government's agenda to modernise and an ageing population, requiring high quality and personalized services that are efficiency and cost effective, facilitated by complex organizational technology. Efforts to improve the efficiency and effectiveness of social care provision need to be mindful of the peculiarities of the sector, in particular, the poor level of IT skills and abilities. Job specifications will require revision as technology is increasingly integrated with care workers' current roles and responsibilities. Social care organisations that are able to develop and implement effective IT strategies may well be able to leverage a significant competitive advantage.

1. Introduction

There has been an increasing call for research into information technologies (IT) to facilitate 'real change' in the organisations and societies in which they are implemented. Public services in particular are in need of development in order to improve their contribution to society (Wastell and White, 2010; Berry and Bendapudi 2007; Desouza et al, 2007). They require targeted research, in collaboration with expert practitioners (Ward, 2012), to explore the idiosyncrasies of a sector that differs markedly from the private sector in terms of its purpose, staffing, governance and funding structures (Teo and Ranganathan, 2003). No longer can information technology (IT) adoption be seen as simply a technology driven organisational change, rather it must be viewed as a complex, iterative process of societal change (Walsh et al, 2010; Robey and Boudreau, 1999).

Social care concerns the provision of healthcare to individuals within their own homes (NHS, 2015). As life expectancy increases and individuals exercise their rights to choose their mode and provider of healthcare, so social care services play an increasingly important role in maintaining national health (ONS, 2014). Thirty years ago it was socially acceptable for people that needed care to be catered for in long-stay hospitals, and effectively to be excluded from society (Putting People First, 2007). Consequently, social care today forms a much greater proportion of healthcare provision in the UK with around 1.6 million people now working in the sector (Eborall et al., 2010). An estimated 21,900 organisations in England, including the National Health Service (NHS), large charities, councils with social services and small care homes, deliver adult social care (Fenton, 2011).

The 'privatisation' of service delivery contracts has led the 150 local authorities with social service responsibilities to outsource over 80% of social care services to independent organisations creating a highly competitive and fragmented small and medium enterprise (SME) structure (Eborall, 2003).

The role of social services departments has therefore changed to act as a care broker and care manager (Asthana, 2011; Thane, 2009) rather than a provider of direct support.

For these reasons social care organisations are looking to maximise the opportunities afforded to them in order to deliver against the challenges that lie ahead (Gershon, 2003). Technology is expected to facilitate the cost-effective provision of social care services both in administrative and managerial processes and in care practice (DoH, 2005). Despite the millions spent on researching healthcare IT, the research community has yet to agree whether information systems (IS) will make healthcare more seamless, efficient, patient-centred and safe, or more fragmented, time-consuming, technology-centred and risky (Dey, Sinha and Thirumalai 2013; Petrakaki et al. 2012; Greenhalgh and Stones 2010; Baines, Wilson and Walsh, 2010).

Studies of technology acceptance, discussed in the following sections, have found a range of factors that mediate users' intentions to engage with new IS. Few studies however, have been undertaken that specifically explore the use of technology in a social care setting and none have yet examined the factors that moderate IT adoption. This study makes a contribution to knowledge by examining the moderating effects of IT adoption in a Social Care setting in the South West of England utilising an adapted Unified Theory of Acceptance and Use of Technology (UTAUT) framework. Reflecting the characteristics of the sector, the moderating effects of Gender, Age and IT Skills upon Behavioural Intention are examined through a survey of social care workers.

2. Literature Review

2.1 Technology Use in Social Care

The Wanless report (2002, p102) proposed that “*without a major advance in the effective use of ICT...the health service will find it increasingly difficult to deliver*”. There is little information identifying whether non-governmental healthcare organisations have in fact invested in IT. The few examples include the Brandon Trust reviewing and evaluating its business IS (Stair and Reynolds, 2006). Riley and Smith (1997) commented that the social care sector had not been a great user of IT and its application was generally less well developed than in the rest of the health care sector. They state that social care organisations did not start to use IT until fairly late and that this change was largely due to the recommendations of the Griffiths (1988) report on Community Care that opened up the provision of social care to the free market and therefore to more technologically mature care providers.

Most of the literature on technology use in health care settings indicates frequent failure in the ability to deliver effective technology deployment. Bhattacharjee and Hikmet (2007) claim that most healthcare IT development projects focus on system considerations such as security, connectivity and new functionalities, rather than user considerations such as the system's impact on user's work behaviours. Aarts (2011) reviews the complexities of healthcare IT and concludes that the majority of system failures occur during the period of implementation, and similar to Bhattacharjee and Hikmet (2007), note the effect that the implementation had upon users' work processes. Implementation failures also adversely affect future system developments since people are less confident that implementation will be successful (Aarts, 2011; Heath et al., 2003; Smith and Smart, 1999; Standish Group, 1995).

Gaining and sustaining commitment to new methods of working are problems that are often associated with the introduction of IS (Chaffey and White, 2010; Riley and Smith, 1997). These problems are particularly evident in health and social care environments due to a lack of enthusiasm to use computers, a perception that investment in IT removes resources from service users and the purpose for introducing systems not being communicated effectively (Riley and Smith, 1997). IT deployment and usage are often regarded as a burden that interferes with their core missions and diverts precious resources from those in need in order to satisfy bureaucratic requirements (Petrakaki et al. 2012; Zhang and Gutierrez, 2007). The factors that impact upon the adoption and acceptance of new technologies in this distinct sector are therefore in need of careful examination.

2.2 Technology Acceptance

Organisations have attempted to take advantage of the advances in hardware and software capabilities by investing in costly IS. Many however, have failed to reap the benefits of these systems due to the problem of underutilisation (Venkatesh and Davis, 2000). The successful use of IS depends not only on the commissioning of technology itself, but the fact that it has to be accepted and used by employees in order to improve performance (Marler and Liang, 2012). Riley and Smith's (1997) study of IS development and implementation in social services is the first of few studies relating to the use of technology in the social care sector in England. Later studies examined the impact of technology on unskilled work (Munro and Rainbird, 2002) and the relationship between technology and medical practice (Heath et al., 2003) and managing mobile provision for community healthcare support (Fitch and Adams, 2006). Further studies have been conducted outside the UK, comprising a wide range of methods and contexts and indicate that it is an issue of global concern. These include an application of the decomposed theory of planned behaviour in a social services setting in the United States (Zhang and Gutierrez, 2007), technology power in health and social care in Canada (Poland et al., 2005), Business Process Reengineering in Danish social service administration (Hagedorn-Rasmussen and Vogelius, 2003), social services contracting in the United States (Romzek and Johnston, 2005), nursing in Taiwan (Chen et al., 2008), physicians in the US (Bhattacharjee and Hikmet, 2007; Klein, 2007), technology and nursing in Australia (Barnard and Gerber, 1999; Barnard, 2002), occupational therapists' perception of information and communication technology in Australia (Taylor and Lee, 2005), Enterprise Resource Planning adoption among surgeons in Denmark (Jensen and Aanestad, 2007), meeting patients' needs with information systems in Holland (Riet et al., 2001), emergency room caregivers' use of Radio Frequency Identification (RFID) technology (Chen et al., 2008), and the process of technology acceptance in a Belgian university hospital (Devolder et al., 2012).

While numerous models exist for the study of technology acceptance, including Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB), Venkatesh et al. (2003) referred to several prominent models with roots in IS, psychology, sociology and innovation theories when formulating the UTAUT. Venkatesh et al. (2003) examined the effect of the models' determinants on intention. As a general rule it is found that when behaviours pose no serious problems of control, they can be predicted from intentions with considerable accuracy (Ajzen 1988; Sheppard et al. 1988).

The UTAUT framework has been utilised in a variety of studies to uncover those factors that determine users' likelihood of using information technologies. For example, AbuShanab and Pearson (2007) investigated the determinants of internet banking in Jordan and found that performance expectancy, effort expectancy and social influence were significant predictors; they also found that gender moderated the resultant behavioural intention. Yang (2010) explored consumer intentions to use mobile shopping service; adapting the UTAUT framework to incorporate 'attitude' and 'hedonic performance expectancy' it found that the hedonic aspects of mobile commerce were the prominent driver. Chou (2010) used UTAUT in conjunction with social cognitive theory to explore individuals' motives for contributing knowledge in online communities. Chiu, Fang and Tseng (2010) adopted UTAUT and the Technology Readiness model for the examination of the likelihood to use self-service kiosks. They found that the four determinants described in the UTAUT model influenced likelihood of use, their perceptions varied between potential and early adopters. Deng et al. (2011) identified the determinants of web based question-answer services adoption and found that 'facilitating conditions' was a significant predictor of intention to use. Sheng et al. (2011) use an extended version of the UTAUT model to examine the effect of positive and negative experiences upon intention to use online social networking. They suggest that negative experiences had a stronger effect than positive experiences upon behavioural intention. Bhattacharjee et al. (2012) use UTAUT to examine users' intentions to switch between IT providers. Devolder et al. (2012) employ UTAUT, Five Factor Model and the Technology Readiness Index and conclude that it is necessary to acknowledge the individuality of subgroups of users during the implementation of new technologies.

Despite the increased attention on technology use in different industry sectors, no studies in the existing literature have so far been carried out to examine the factors that moderate IT adoption in the social care setting. It is a sector that does not only have profound social and economic impact on our lives but also requires some radical changes in order to meet the growing demand of the aging society (ONS, 2015). Our study extends the existing literature by specifically examining the moderating effects of IT adoption in the social care sector. Our analysis will be beneficial to policy makers for strategic decisions on IT investment as well as aiding successful implementation of IT projects in the sector.

3. Research Context and Theoretical Framework

It is recognised that research needs to concentrate on identifying and understanding the relationship between IT and user behaviour in healthcare settings in order to improve its operational capabilities and effectiveness, and to improve our understanding of its theoretical constructs (Romanow et al., 2012). This study explores the behavioural intention of social healthcare workers prior to the implementation of mobile IT in a healthcare organisation in England. It reflects the rapid developments in IT, and the recent discussions about the use of technology in social care that have focused upon the use of mobile technology for workers. (Aarts, 2011; Bhattacharjee and Hikmet, 2007). Venkatesh et al (2003) highlighted the limitations of the previous research including the fact that most of the empirical studies had been conducted in voluntary situations where users have had a choice to use or not to use the system. This study is made upon the mandatory use of a new IS, using an adapted UTAUT framework (Figure 1).

[Figure 1 here]

3.1 Performance Expectancy

Performance Expectancy (PE) relates to the users expectation that use of the technology will result in an improvement in their performance of work (Bhattacharjee et al., 2012; Yang, 2010; Deng et al., 2011; Venkatesh et al, 2003). Empirical studies have shown that PE is the strongest predictor of intention (Venkatesh and Davis, 2000; Agarwal and Prasad, 1998; Compeau and Higgins, 1995; Taylor and Todd, 1995a; Davis et al., 1992; Thompson et al., 1991).

A growing recognition that technologies fail when deployed in organisations (Standish, 1995) and that IT projects in the NHS have a high failure rate (Smith and Smart, 1999) demonstrate that technology may not be able to support and enhance workplace activities (Heath et al, 2003). One of the reasons given for these failures relates to the ability of developers to understand settings and working practices (Heath et al., 2003). This is supported by Bhattacharjee and Hikmet (2007) who claim most healthcare information technologies focus on system considerations rather than the system's impact on user's work behaviours.

A critical factor for the future of social care relates to the use of technology, where it is a way of delivering efficiencies, both in administrative and managerial processes (Gershon, 2003) and care practice. As that technology is deployed people will form intentions toward using it based upon an appraisal of how they believe it will improve their performance (Davis et al., 1989).

H1: Performance Expectancy will have a significant influence on intention

Venkatesh et al. (2003) expected the relationship between PE and intention to be moderated by age and gender. Within social care it is also expected that this relationship will be moderated by the level of IT skill that a person possesses. The view is that people who have lower levels of IT skill will not find technology useful.

H2: The influence of Performance expectancy on intention will be moderated by age, gender and IT skill

3.2 Effort Expectancy

Effort Expectancy (EE) relates to the user's perception of the ease of use of a system (Bhattacharjee et al., 2012; Deng et al., 2011; Venkatesh et al., 2003). Zhang and Gutierrez (2007, p226) state "*the*

more comfortable users felt about using IT the more they intended to use the IT". Pelletier (1995) identified a lack of IT literacy as a barrier to technology use and Barnard and Gerber (1999) recognised that different skills are required by professionals to use technology. Rhodes (2003) noted that recruitment practice and documentation in the social care did not reflect the importance of IT and information management skills and this may partially explain why Riley and Smith (1997) found that there was a general lack of enthusiasm to use computers within this sector.

H3: Effort Expectancy will have a significant influence on intention

Research conducted by Bem and Allen (1974) and Bozionelos (1996) suggests that EE is more salient for women than for men and that older workers place more importance on effort expectancy constructs. Plude and Hoyer (1985) have shown that increased age is associated with difficulties in processing complicated stimuli and allocating attention to information on the job. Overall 80% of the social care workforce is female, and there is concern that the workforce is ageing (Eborall and Griffiths, 2008) and people lack IT literacy skills. It is therefore expected that the EE to intention relationship will be moderated by gender, age and IT skill.

H4: The influence of Effort expectancy on intention will be moderated by age, gender and IT skill

3.3 Social Influence

Social Influence (SI) relates to subjective norms and the perception that others believe it is important for the system to be used (Bhattecherjee et al., 2012; Deng et al., 2011; Venkatesh et al., 2003). Furthermore, the influence of others may also contribute to objective norms and users' perceptions of the quality of the system (Wang and Lin, 2011) and influence their continued use of it (Lu and Lee, 2010). There are also concerns that if equipment is made available to some staff and not others it could affect how they interact (Fitch and Adams, 2006).

Technology is seen as a necessity in order to meet the requirements of programme performance evaluation, which is viewed as a burden that diverts precious resource from those in need (Petrakaki et al. 2012). Previous empirical tests have shown however, that where the use of technology is mandated, social influence becomes significant (Venkatesh et al., 2003).

H5: Social Influence will have a significant influence on intention

In terms of gender, theory suggests that women tend to be more empathic (Mellor et al, 2009; Laurent and Hodges, 2009; Peek et al 1997). Older workers are also more likely to place increased importance on social influences. Approximately 80% of the social care workforce is female and there is concern that the workforce is ageing (Eborall and Griffiths, 2008), therefore it is expected that the SI will be moderated by gender and age,

H6: The influence of Social Influence on intention will be moderated by age and gender

3.4 Facilitating Conditions

Facilitating Conditions (FC) relates to the user's belief that the organizational environment supports the use of the system (Deng, Liu and Qi, 2011; Venkatesh et al, 2003). Hoy (1999) identifies the availability of an infrastructure as a facilitator to technology use and Riley and Smith (1997) referred to a lack of hardware as a factor that turned workers away from technology. In this study of social care workers, the immediate working environment is often the home of the recipient of care. In this respect, the organization has little influence or control over the availability of elements of the technology that may be perceived to be necessary to the caregiver, such as, power supply, internet access etc.

H7: Facilitating Conditions will have a significant influence on intention

Hall and Mansfield (1975) noted that that older workers attach more importance to receiving help and assistance on the job. This is further supported in terms of using complex IS given that increasing cognitive and physical limitations are associated with age (Venkatesh et al, 2003). It is therefore expected that the FC to intention relationship will be moderated by age because there is a concern that the social care workforce is ageing (Eborall and Griffiths, 2008).

H8: The influence of Facilitating Conditions on intention will be moderated by age

Yang (2010) found that hedonic satisfaction was a significant determinant of intention to use technology. This study of mandatory technology use in social care environment does not expect its

users to be motivated by any dimensions hedonic satisfaction and therefore this factor is not included in the theoretical model. Voluntariness has been excluded since the proposed technology was a mandatory requirement for the social health workers being studied. Use behaviour is excluded since the study was made prior to the implementation of the mobile technology.

4. Methodology

In this study, the UTAUT model developed by Venkatesh et al (2003) is adapted to investigate the IT adoption in the social care environment in England. Data was gathered through questionnaires and then used to analyse relationships between variables in the model. This data collection method has been the primary method used in most if not all previous studies where various technology acceptance and use models have been applied (e.g. Venkatesh et al, 2003; Harrison et al, 1997; Compeau and Higgins, 1995; Taylor and Todd, 1995b; Mathieson, 1991; Davis et al, 1989).

4.1 Questionnaire Design

Questions used in the initial design of the questionnaire were based on some of the items used in the UTAUT Model (Venkatesh et al, 2003). The questionnaire was split into six sections to facilitate the measurement of dependent and independent variables as well as attributes. All questions were pre-coded ready for statistical analysis that is detailed in section 4.3. In keeping with other studies of technology adoption (for example, Lin and Bhattacharjee 2009, Heerink et al, 2008) a five-point Likert-scale was used for the attitude measurement in the questionnaire. Section six contained an additional six questions relating to respondents' attributes including: current levels of IT skill, age, gender, the type of organisation and service the respondent worked for and their job role. These questions provide background information on the surveyed sample that would be used to conduct some of the tests for moderating factors.

4.2 Data collection

A pilot study was conducted to ensure the questionnaire was a valid and reliable tool for data collection and the data was not used to empirically validate the model being tested. Several site managers were requested to ask their staff to complete the questionnaires. A total of 65 questionnaires were sent out, of which 56 were returned (86% response rate). Six of the questionnaires could not be used as they had not been fully completed. The data was then entered into SPSS to conduct tests related to reliability and validity. On examination it indicates that a considerable number of correlations exceed 0.3, therefore the matrix is suitable for factoring (Coakes et al., 2008).

Having confirmed the questionnaire as being valid and reliable, 650 paper copies of the questionnaire were distributed by post to the gatekeepers in nine different social service organisations in the South West of England. They were local authorities with social services responsibilities including both not-for profit providers and for profit providers. After two and a half weeks all completed questionnaires were collected. A total of 225 participants returned the questionnaire but 25 had to be discarded as they were not completed correctly or there was missing data. This provided a response rate of just over 30%. By gender, 79% of the respondents were female and 21% male. These figures support those given by Eborall and Griffiths (2008) who stated that 80% of the social care workforce population is female. The percentages given for the age groups of the respondents in Figure 2 are also similar to those given in Eborall and Griffiths's (2008) report and can be considered as representative of the sector under study.

[Figure 2 here]

4.3 Data analysis method

To understand the interrelationship between the constructs of interest, the adapted UTAUT model was tested with SPSS. Before that, the variables were tested for reliability and validity in order to check whether the means of measurement are accurate. SPSS was then used to conduct multiple

regression analysis, where the regression equation represents the best prediction of a dependent variable from several independent variables (Coakes et al., 2008). Regression analysis may be used when independent variables are correlated with one another and the dependent variable. The standard model was employed for the analysis to examine the relationship between the whole set of independent variables and the dependent variable rather than employing hierarchical multiple regression where the researcher determines the order of entry of the independent variables (Coakes et al., 2008).

5. Data Analysis and Results

5.1 Reliability and validity of measurement items

The purpose of this section is to assess the adequacy and validity of our measurement items. Bartlett's test of sphericity and the Kaiser-Meyer-Olkin's measure of sampling adequacy were conducted to determine the factorability of the matrix as a whole (Tabachnick and Fidell, 2001). The result is displayed in Table 1. It demonstrates that the Bartlett test of sphericity is large, and significant, and the Kaiser-Meyer-Olkin measure of sampling adequacy is greater than 0.6, which confirms that factorability is assumed (Coakes et al, 2008). The correlation matrix was also examined and it indicated that a considerable number of correlations exceed 0.3, therefore the matrix is suitable for factoring (Coakes et al, 2008).

Reliability or internal consistency was assessed by performing the Cronbach's alpha test. The result is described in Table 2 that provides the Cronbach's alpha values for the four independent variables (PE, EE, SI and FC) and the single dependent variable (BI). Items validity is considered acceptable if alpha factor of measured items exceed a level of 0.60 (Nunnally, 1967). The values in Table 2 are all above 0.6 and therefore indicate construct reliability.

[Table 1 here]

[Table 2 here]

Next, further examination of the variables for IT skill, age, gender and type of role was conducted to identify if any of the variables were related. A Pearson correlation test was conducted and the results presented in Table 3. Pearson's correlation coefficients are accurate measurement in which to confirm that there are no systematic errors between at least two variable datasets (Kamble et al. 2010). The table provides the value for the Pearson Correlation coefficient, significance and the number of cases depicted by N. Correlation analysis shows the strength and direction (positive or negative) of the linear relationship between two variables (Coakes et al, 2008). A higher correlation coefficient (values range from -1 to +1) means a stronger relationship between two variables and the direction indicates if a relationship is positive or negative. The significance value shows whether or not the relationship between the two variables is significant i.e. $p < .05$.

[Table 3 here]

The result in Table 4 illustrates that there is a weak negative relationship between IT Skill and age and IT skill and role, but both relationships are significant ($r = -.281$, $p < .05$ and $r = -.153$, $p < .05$ respectively). The same can be said between age and role i.e. there is a weak negative relationship between them that is significant ($r = -.265$, $p < .05$). In reality, these relationships mean that as IT skill increases, the age of a person decreases (i.e. younger people are more IT literate) and the type of role decreases (i.e. managers are more IT literate than front line staff). Furthermore, with the increasing age, the type of role decreases (i.e. older people are in a supervisory or management role).

5.2 Hypotheses testing

This section involves examining the significances and strengths of each hypothesized effect in the adapted UTAUT Model. The first test combined all four independent variables PE, EE, SI and FC without moderators. Four independent variables and 200 samples were used to perform multiple regression analysis and the results are presented in Figure 3. Hypotheses H1, H3, H5, and H7 were

all supported. Performance expectancy ($\beta = 0.360, p < 0.001$), effort expectancy ($\beta = 0.134, p < 0.05$), social influence ($\beta = 0.169, p < 0.01$), and facilitating conditions ($\beta = 0.253, p < 0.001$) had significant effects on behavioural intention and jointly explained over 52.5% of the variance in the dependent variable, providing empirical support for Hypotheses H1, H3, H5, and H7 respectively. Performance expectancy has the strongest affect on behavioural intention, followed by facilitating conditions then social influence and lastly effort expectancy.

[Figure 3 here]

Following the above test the moderating factors, age, gender, and IT skills were incorporated in the model to identify if hypotheses H2, H4, H6 and H8 are supported. In total, 28 structural models from 4 hypotheses were tested. The results of the moderating effects are summarized in table 4, which displays the direct determinants added to the model with moderating factors, the associated R^2 values and the related Beta coefficients for all the tests conducted.

Adding age as a moderating factor increased the variation in behavioural intention slightly, but the affect of adding age as a moderating factor is not significant. It displayed a similar result when adding gender as a moderating factor. Surprisingly, the variation in behavioural intention increased to 56% when IT Skill was added as a moderating factor and the SI variable was also shown to be significant ($\beta = 0.886, p < 0.001$). As expected combining age and gender as moderating factors to the model increased the variation in behavioural intention, but the affect of adding age and gender was not significant. Adding age and IT skill together as moderating factors increased the variation in behavioural intention slightly, but the affect is not significant. When adding gender and IT skill the variation in behavioural intention increased to 56% and the SI ($\beta = 0.826, p < 0.001$) and PE ($\beta = 0.724, p < 0.01$) variables were revealed to be significant. The final test conducted added all three moderating factors age, gender and IT skill to all the relationships. The variation in behavioural intention increased slightly and the SI ($\beta = 0.578, p < 0.01$), variable was also shown to be significant.

[Table 4 here]

Figure 4 displays the beta coefficients as moderated by the factors for each of the relationships between the direct determinants and behavioural intention. The SI to Intention relationship is the only one that is significantly influenced by gender and age at 95%. Overall, these results show that the H2, H4, H6 and H8 hypotheses are supported, but the affects of the moderating factors are not significant expect H6 where Social Influence is significant.

[Figure 4 here]

6. DISCUSSION

6.1 Performance Expectancy

In this study, performance expectancy is shown to have the strongest effect on intention, supporting previous empirical tests (Agarwal and Prasad, 1998; Compeau and Higgins, 1995; Davis et al, 1992; Taylor and Todd, 1995a; Thompson et al., 1991; Venkatesh and Davis, 2000). This result demonstrates that as long as the IT and IS implemented are perceived as being useful then users will form positive intentions to use them. Obviously, the challenge is to first identify the right type of technology or system that will enhance workplace activities. Davis et al. (1989) commented that people form intentions toward using computer systems based on how they believe it would improve their performance. Previous empirical tests indicate that age and gender will moderate the performance expectancy and intention relationship (Morris and Venkatesh, 2000; Venkatesh et al, 2000). In the tests conducted in this study, the variance in BI marginally increased. Nevertheless, age, gender, and age and gender together do have an influence on the performance expectancy to intention relationship, but the affect of adding these moderating factors is not significant. When incorporating IT Skill as a moderating factor, the variance in behavioural intention increased, confirming that IT Skill does have an influence on the performance expectancy to intention

relationship. The result is in line with previous studies: for instance, Pelletier (2001) identified a lack of IT literacy as a barrier to technology use and Rhodes (2003) also stated that IT skills impacted the progress of improved information management.

6.2 Effort Expectancy

The effort expectancy to intention relationship is the weakest of the four relationships, but it is still significant even when moderators are not added to the model. Considering the lack of IT Skill, highlighted in social care (Pelletier, 2001; Rhodes, 2003) this result is surprising especially as Venkatesh et al (2003) believed that effort related constructs are expected to be more important in the early stages of using a new system in both voluntary and mandatory environments.

There are further underlying reasons that must be taken into consideration. The first relates to self-efficacy, one of the major factors theorised to underlie intrinsic motivation (Bandura, 1977; Lepper, 1985). Within the technology acceptance model, the perceived ease of use to intention relationship is meant to capture intrinsically motivating aspects, which would also suggest that they are captured within the Effort Expectancy construct in the UTAUT model. However, it is well known that the social care work force is typically low paid and low skilled, which may relate to self-efficacy. The results of the analysis show that 32% of the workforce in the sample has little or basic skills relating to using computers, which may be directly associated with Compeau and Higgins (1995) belief that self-efficacy within social cognitive theory represents an individual's perception of his or her ability to use computers. Therefore the strength of the relationship between effort expectancy and intention may not have captured self-efficacy aspects within the study.

The second reason relates to external variables related to training, documentation, user support (Davis et al, 1989) and system features (Benbasat, Dexter and Todd, 1986; Bewley, Roberts, Schoit and Verplank, 1983; Dickson, DeSanctis and McBride, 1986; Miller, 1977). In addition, recruitment practice and documentation did not reflect the importance of IT and information management as core skills in social care (Rhodes, 2003). These reasons are directly linked with the fact that social care is still heavily reliant on paper based systems and therefore most of the workforce in a direct care / support role has never had to use computers in work related daily tasks. Furthermore, another reason to explain the weak relationship is that people that work in social care may not use computers at work, but they may still be comfortable or competent, because they use computers at home (68% of the sample was comfortable or competent using IT).

Previous empirical tests have highlighted EE to be more important for women than men (Venkatesh and Morris, 2000; Venkatesh et al, 2003), however the fact that 79% of the sample are women assumed that effort expectancy would be more important and highly significant, yet this was not the case. The moderating effect of gender to the relationship between effort expectancy and intention was not significant. In addition, previous studies have indicated that older workers place more importance on the effort expectancy construct. However, when age and IT skill were added as moderating factors, the relationship between effort expectancy and intention was not significant despite 52% of the total sample being over 40 years old.

6.3 Social Influence

The social influence to intention relationship is shown to be stronger than the effort expectancy to intention relationship. Different views offered within the literature on the acceptance and use of technology highlight compliance, behavioural reward or punishment and image as factors that relate to the social influence construct. The fact that use of the system is mandatory may be seen as compliance. However, Hartwick and Barki (1994) found that users are unwilling to comply even when use is mandated.

It is believed that referent power, as identified by French and Raven (1959), is apparent and very much relates to the social care environment, even though it is not clearly recognisable from the analysis. This viewpoint is explained by the survey result that 34% of the total numbers of people in the 30–60 plus age groups are in supervisory and management roles, yet 38% of people in the same age groups have little or no knowledge of using computers. Given that 67.5% of the sample is comfortable or very competent in using computers may indicate that supervisors and managers

might feel threatened by their peers and co-workers. It is theorised that some managers will use their position of authority to delegate tasks that are computer related to their staff members who are more effective using computers. Alternatively, because of their own inabilities they will discourage the use of computers and therefore may prevent individuals from using the system. The opposing view is that supervisors and managers that are comfortable or competent in using computers (34%) may encourage their staff members to use more technology. However there is a conflict of interest that relates to funding, because technology is seen as a burden diverting precious resources from those in need. Funding may not be available for training activities and staff may not be given the time to learn and develop new skills.

Miller (1976) and Venkatesh et al (2003) suggest that social influence is more significant for women as they are more sensitive to opinions when informing intentions to use new technology. Morris and Venkatesh (2000) also suggest that older workers place greater importance on social influences. The results indicate that neither age nor gender significantly influences the social influence construct, however when moderated by IT Skill social influence is very important. This can be related to the fact that 38% of the total sample has little or no knowledge of using computers or has only a basic knowledge. People within social care will place a higher importance on social influences, because of the support and assistance they will need to successfully use the systems being introduced. Moreover, it is not necessarily related to compliance, but the fact that people form very good relationships with others and therefore they are able to find peers or friends that will support them during the process. It is theorised that the importance of the social influence construct when moderated by IT skill is due to the image and power one will gain when they know how to use a system. This can be applied to both genders, but it may be more significant for women. That is because, if women are more sensitive to others' opinions, those that can use the system will be seen more favourably, creating a positive image and elevating their standing within the group (Blau, 1964; Kiesler and Kiesler, 1969; Pfeffer, 1982). The elevated status would bring them more power and influence as a result of using the system and provide a basis for greater productivity (Venkatesh and Davis, 2000).

6.4 Facilitating Conditions

Facilitating conditions is shown to have the second strongest affect on intention without moderating factors. This result contrasts the findings of the study conducted by Venkatesh and Davis (2000) where it was found that facilitating condition constructs were fully mediated in models that contained the effort expectancy construct. The result also supports the literature regarding the challenges to technology use in social care. In the IFF (2007) report, the lack of investment available to implement infrastructures and IT systems is reflected in the majority of providers being small or medium in size with annual incomes below one million pounds. Rhodes (2003) also found that practitioners did not have access to equipment at all times, because it was locked away or systems were not available out of office hours remotely.

7. CONCLUSIONS

This study responds to the calls for greater collaborative research between academics and expert practitioners (Ward, 2012) and makes a contribution to knowledge by examining the moderating effects of IT adoption in the social care sector. It provides rigorous, contextualised findings that are of relevance and value to the social care sector for making meaningful operational improvements (Wastell and White, 2010; Desouza et al, 2007). It highlights many research implications for technology acceptance and use in social care that may be used to inform policy, strategy and practice. Organisations within the sector are faced with demanding changes based on the government's agenda to modernise social services. It will require high quality and personalized service (DoH, 2007) with resource efficiency and cost effectiveness. These factors will necessitate the need for complex and sophisticated organizational technology in order to manage resources and meet contract requirements. Therefore, organisations will have to look to technology as a way of delivering efficiencies to maximize the opportunities available to them (Gershon, 2003).

For this to happen organisations must embrace and accept that IT and IS will have a strategic role in their future. While the benefits and impact of IT and IS adoption are generally well known organisations often still fail to recognise the importance of considering them within the overall strategic plan (Chaffey and White, 2010). This is a particularly important issue in a sector that is typically technology-immature yet is likely to be reliant upon the benefits of technologies in order to deliver the increasingly demanding services that are required of it. Organisations that are able to develop and implement effective IT strategies may well be able to leverage a significant competitive advantage.

Organisations within the social care sector can learn from the mistakes of others to enable them not only able to successfully implement systems, but to also make sure they are used effectively by all those that need to. Simultaneously, organisations will need to ensure their members of staff have the necessary level of IT skills and abilities to make optimum use of the IS implemented, so that they are able to reap the potential benefits. Senior executives have to understand that the roles of support staff are changing over time and the new ways of working will require new technological skills. If staff do not have these skills they will not be able to support individualized services. The key aspect is that organisations must update and include IT skills in job descriptions for roles that are care / support based.

The poor level of IT skills among staff at all levels will conspire to burden those with greater skills. Those in positions of power may choose to delegate responsibility for IT activities to their subordinates. This may be of minimal concern for operational tasks but is of significant importance if strategic or critical responsibilities also become devolved. This may be magnified by the second phenomena whereupon individuals are rewarded with greater social influence if they are able to demonstrate their capability to utilise IT systems. Subordinates may therefore be internally motivated to undertake tasks of greater importance, scope and scale. This may also encourage the devolvement of increasingly critical and strategic IS activities to those with marginal skills and probably inadequate strategic comprehension.

This study offers suggestions for improving the practice of social care. Just as Wastell and White (2010) recognise the problems when public bodies treat the data that is held within IS as 'true facts' without recognising the context within which that data was acquired and should therefore be interpreted. Similarly, the data that may be acquired through the use of mobile technologies in a social care setting must also be considered in light of its context. In order to address this need, social care staff should perhaps be considered as advocates, not only of the recipients of the care service, but also of the data that is held about them. Social care staff then provide the context within which the content of IS may be interpreted. This will require a further degree of staff training, however its successful inclusion may also serve as a valuable incentive that increases staff perception of the value of such IS and thereby significantly increase their intention to adopt and use new technology.

Nevertheless, this study has some limitations that can lead to further research opportunities. For example, self reported intention is employed as the basis to someone using a new system and it has been argued that when behaviours pose no serious problems of control they can be predicted from intentions with considerable accuracy (Ajzen 1988; Sheppard et al., 1988). Future research should attempt to employ measures of actual use and therefore it is important to try and gain access to organisations implementing systems that are going to be used by direct care / support staff in order to capture initial technology acceptance attitudes. Furthermore, the research conducted was cross-sectional rather than longitudinal due to the time and resource constraints. Future research could undertake longitudinal studies that would provide greater insight, especially in relation to the way that direct determinants and moderating factors affect the intention relationships. In addition, the importance of social influence in determining technology adoption decisions among women merits further attention by researchers and practitioners alike. Morris and Venkatesh (2000) have highlighted peer pressure and superiors' influence to be determinants of social influence, which may be the reason associated with a significant relationship between social influence and intention in this study. The fact that over 80% of the social care workforce is female suggests that greater

importance should be placed on clarifying the underlying cognitive mechanisms that women associate with social influences.

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